

Applicants' representative thanks the Examiner for the courtesies extended in the telephone interview of January 15, 2002. Applicants have incorporated the changes discussed in the telephone interview into the Amendment shown above.

By this Amendment, the present application includes independent claims 1, 19, and 43. Independent claim 1 recites an apparatus for thermally cycling biological samples, comprising a sample block having a plurality of openings for receiving sample wells of a sample well tray therein, and a plurality of spring devices interposed between the sample block and the sample well tray. The sample wells have closed sample well bottoms configured to contain a sample. The plurality of openings for receiving sample wells are configured to contact an outer surface of a corresponding sample well. The sample block further comprises a plurality of receiving portions in a top surface thereof. The plurality of spring devices are positioned at least partially in the plurality of receiving portions, the plurality of spring devices imparting an urging force on the sample well tray. The plurality of spring devices create the urging force to urge the sample wells away from the openings in the sample block upon removal of a pressing force imparted on the top of the sample well tray for pressing the sample wells into the openings of the sample block.

Independent claim 19 recites an apparatus for thermally cycling biological samples, comprising a cover, a sample block having a plurality of openings in a top portion thereof for receiving a sample well tray having a plurality of sample wells, and a plurality of spring devices. The sample wells have closed sample well bottoms configured to contain a sample. The plurality of openings for receiving sample wells are configured to contact an outer surface of a corresponding sample well. The sample

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block further comprises a plurality of receiving portions in a top surface thereof. The plurality of spring devices are positionable between the sample block and the sample well tray at least partially in the plurality of receiving portions to urge the sample well tray away from the sample block when the cover is moved from a closed position toward an open position. The cover imparts a downward force on the top of the sample well tray to press the sample wells into the openings of the sample block when the cover is moved toward a closed position, the urging mechanism imparting an upward force on the sample well tray, and wherein the downward force imparted by the cover retains the sample well tray against the sample block when the cover is in the closed position.

New independent claim 43 recites an apparatus for thermally cycling biological samples, comprising a sample block having a plurality of openings for receiving samples of a sample well tray therein, a sample well tray holder for holding the sample well tray therein, and a plurality of leaf springs interposed between the sample block and the sample well tray holder. The sample wells have closed sample well bottoms configured to contain a sample. The plurality of openings for receiving sample wells are configured to contact an outer surface of a corresponding sample well. The sample well tray is movable relative to the sample well tray holder. The plurality of leaf springs are configured to impart an urging force on the sample well tray via the sample well tray holder. The plurality of leaf springs create an urging force to urge the sample wells away from the openings in the sample block upon removal of a pressing force imparted on the top of the sample well tray for pressing the sample wells into the openings of the sample block.

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**Rejection under 35 U.S.C. § 112, second paragraph**

In the final Office Action, the Examiner withdrew the rejection under 35 U.S.C. § 112, first paragraph. The Examiner, however, rejected claims 1-8, 10-28, and 40 as allegedly being indefinite under 35 U.S.C. § 112, second paragraph. The Examiner asserts that these claims "are incomplete for omitting essential elements, such omission amounting to a gap between elements," citing MPEP § 2172.01. The Examiner alleges that "a heating means" is an omitted element of the claimed heating apparatus. Although Applicants respectfully disagree with the basis for this rejection, this rejection is now moot in light of the amendment to the claims to remove the recitation of "heating apparatus" from all of the pending claims.

The Examiner also rejected claims 19 and 40 for the recitation of the term "sufficient." Although Applicants do not believe that § 112, second paragraph is a proper basis for such a rejection, Applicants have removed the recitation of "sufficient" from the claims, thereby rendering the rejection moot.

For these reasons, withdrawal of the 35 U.S.C. § 112, second paragraph rejections is requested.

**Rejections under 35 U.S.C. § 102**

The individual rejections under 35 U.S.C. § 102 are addressed below. Applicants respectfully assert that the pending claims are in condition for allowance.

In each of the rejections below, the Examiner has stated that the "process limitations are not accorded patentable weight in a claim which is drawn to an apparatus." Applicants assert that the recitations referred to by the Examiner are not, in fact, process limitations, but describe the functionality and structure of the device. No

process or method steps are set forth in either of these claims and, therefore, the recitations should be accorded patentable weight. Moreover, functional claim limitations do not render claims improper. See MPEP § 2173.05(g).

**Aysta et al.**

In the Office Action, the Examiner rejected claims 1-2, 11-12, 19-20, 24-25, and 40 as being anticipated by Aysta et al. ("Aysta"). Aysta is directed to a separation device 10 for separating liquid samples with a sample container 12 and collecting container 32. A separation layer 28 is positioned on a bottom of the sample container. The bottom of the sample container includes a conical outlet spout 24 which projects into the collecting container. The outlet spout 24 includes a channel for the flow of liquid from the sample container into the collecting container.

Aysta fails to disclose the apparatus recited in independent claims 1, 19, and 43. For example, Aysta fails to teach or suggest a sample block having a plurality of openings for receiving sample wells of a sample well tray therein, the sample wells having closed sample well bottoms configured to contain a sample, as recited in independent claims 1, 19, and 43. As noted above, the outlet spout of Aysta has an open channel for the flow of liquid. Further, the Aysta device fails to teach or suggest a plurality of openings for receiving sample wells being configured to contact an outer surface of a corresponding sample well, as recited in independent claims 1, 19, and 43. In contrast, the collecting container 32 of Aysta is not configured to contact an outer surface of the outlet spout 34.

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Moreover, Aysta fails to disclose a plurality of spring devices interposed between the sample block and the sample well tray, as recited in claims 1 and 19, or a plurality of leaf springs interposed between the sample block and a sample well tray holder, as recited in claim 43. Furthermore, Aysta fails to disclose a sample well tray holder for holding the sample well tray therein, the sample well tray being movable relative to the sample well tray holder, as recited in claim 43.

Even further, Aysta fails to disclose or suggest a sample block comprising a plurality of receiving portions in a top surface thereof, with a plurality of spring devices positioned at least partially in the plurality of receiving portions, as recited in claims 1 and 19. Moreover, Aysta does not teach or suggest an apparatus for thermally cycling biological samples, as recited in claims 1, 19, and 43. Instead, Aysta is directed to a separation device. For at least these reasons, independent claims 1, 19, and 43 are allowable over Aysta.

**Root et al.**

The Examiner rejected claims 1-8, 11-15, 19-28, and 40 as being anticipated by Root et al. ("Root"). Root is directed to a filtration device with a linear array of cylindrical wells 20 with open bottoms. In the embodiment shown for example in Fig. 14, the cylindrical recesses 214 of the cylindrical wells have central openings 217 through nozzles 218 for directing liquid into an aligned well 78 positioned below the recesses. Col. 8, ll. 30-34.

Root fails to disclose the apparatus recited in independent claims 1, 19, and 43. For example, Root fails to teach or suggest a sample block having a plurality of

openings for receiving sample wells of a sample well tray therein, the sample wells having closed sample well bottoms configured to contain a sample, as recited in independent claims 1, 19, and 43. As noted above, the nozzles 218 of Root have central openings 217 through which fluid may flow. Further, the Root device fails to teach or suggest a plurality of openings for receiving sample wells being configured to contact an outer surface of a corresponding sample well, as recited in independent claims 1, 19, and 43. In contrast, the aligned wells 78 of Root are not configured to contact an outer surface of the nozzles 218 positioned above the aligned wells.

Furthermore, Root fails to disclose a plurality of spring devices interposed between the sample block and the sample well tray, as recited in claims 1 and 19, or a plurality of leaf springs interposed between the sample block and a sample well tray holder, as recited in claim 43. Moreover, Root fails to disclose a sample well tray holder for holding the sample well tray therein, the sample well tray being movable relative to the sample well tray holder, as recited in claim 43.

Even further, Root fails to disclose or suggest a sample block comprising a plurality of receiving portions in a top surface thereof, with a plurality of spring devices positioned at least partially in the plurality of receiving portions, as recited in claims 1 and 19. Moreover, Root does not teach or suggest an apparatus for thermally cycling biological samples, as recited in claims 1, 19, and 43. Instead, Root is directed to a filtration device. For at least these reasons, independent claims 1, 19 and 43 are allowable over Root.

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**Schneebli et al.**

The Examiner rejected previous claims 1-8, 10-15, 19-26, and 40 as being anticipated by Schneebli et al. ("Schneebli"). Schneebli is directed to a thermal cycler having a fully automatic positioning of a lid which can be placed in two positions. The thermal cycler includes a thermal block having a plurality of chambers each of which receives the lower part of a reaction vessel. Schneebli specifically teaches ejector means 62-67 which comprise a combination of pins and ramps that is configured for "separating or removing the lower part of the reaction vessels 13 from the chambers of thermal block 71 when the transport means move the lid 14 from the second position to the first position." Col. 4, ll. 46-51.

Schneebli fails to disclose the apparatus recited in independent claims 1, 19, and 43. Schneebli fails to disclose or suggest an apparatus for thermally cycling with a sample block comprising a plurality of receiving portions in a top surface thereof, a plurality of spring devices positioned between the sample block and a sample well tray, the plurality of spring devices positioned at least partially in the plurality of receiving portions of the sample block, as recited in claims 1 and 19. In the final rejection, the Examiner asserted that Fig. 2 of Schneebli shows a "plurality of springs," despite the fact that Fig. 2 does not clearly indicate what the structure is that the Examiner is pointing to, and despite the fact that the specification does not mention this alleged spring, or the function that it allegedly performs. The Examiner asserted that this alleged "spring" inherently functions to lift the multi-well plate upon removal of the cover 14." The Examiner then cites several columns of the specification that do not even mention the unlabelled "springs," nevertheless the proposition that the unlabelled

"springs" lift the plate. In the "Response to Arguments" section, the Examiner asserts that "the springs can act in addition with ejector means to lift the multi-well plate upon removal of the cover," again reciting the same columns of the specification. Applicants disagree as to the disclosure of Schneebli. It is merely a guess that the unlabelled "spring" is a spring at all. It is even more of a guess that this unlabelled "spring" creates an urging force to urge the sample wells from the openings in the sample block, as recited in claims 1 and 19.

Even were the unmarked and undiscussed structure of Schneebli in fact a spring, which Applicants do not concede, Schneebli does not disclose the sample block comprising a plurality of receiving portions in a top surface thereof, with a plurality of spring devices positioned at least partially in the plurality of receiving portions, as recited in claims 1 and 19. The thermal block 71 of Schneebli fails to include a plurality of receiving portions in a top surface in which a plurality of spring devices are positioned at least partially therein. For at least this reason, claims 1 and 19 patentably distinguish from Schneebli et al.

Furthermore, for the reasons discussed above, Schneebli also fails to disclose a plurality of spring devices interposed between the sample block and the sample well tray, as recited in claims 1 and 19, or a plurality of leaf springs interposed between the sample block and a sample well tray holder, as recited in claim 43. In addition, Schneebli fails to disclose a sample well tray holder for holding the sample well tray therein, the sample well tray being movable relative to the sample well tray holder, as recited in claim 43.

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For at least these reasons, independent claims 1, 19, and 43 are allowable over Schneebli.

**Moser et al.**

The Examiner rejected claims 1-2 and 19-20 as being anticipated by Moser et al. ("Moser"). Moser is directed to a thermal cycler 18 with "a unit heater 33 which holds test tubes and has an annular arrangement of recesses 27, each recess serving as a chamber for holding the lower part of a test tube 21." Col. 3, ll. 20-23. The thermal cycler includes a hinged lid 28 with a springheld pressure plate 46 which presses each test tube 21 into the recesses 27 in the unit heater 33. Col. 4, ll. 25-28. The thermal cycler includes a lifting-out device 53 that includes a rocker 55 pivotable about a pivot 54 of the lid 28, and an ejection disc 58 with a plurality of recesses 61 which are aligned with the projections of recesses 27. Col. 5, ll. 44-59. When the lid 28 is closed, the lifting-out device is inoperative. Col. 5, l. 67—col. 6, l. 1. When the lid 28 is opened beyond a certain angle, a pin comes into a contact with a portion of the rocker to pivot the rocker about the pivot point P to lift the sample containers 21.

Moser fails to disclose the apparatus recited in independent claims 1, 19, and 43. For example, Moser fails to disclose or suggest an apparatus for thermally cycling with a sample block comprising a plurality of receiving portions in a top surface thereof, a plurality of spring devices positioned between the sample block and a sample well tray, the plurality of spring devices positioned at least partially in the plurality of receiving portions of the sample block, as recited in claims 1 and 19. The lifting-out device 53 of Moser does not include a plurality of receiving portions in a top surface of a sample

block, nor does Moser disclose a plurality of spring devices positioned between a sample block and a sample tray. Nor does Moser disclose a plurality of spring devices positioned at least partially in a plurality of receiving portions of a sample block.

Furthermore, Moser fails to disclose or suggest a plurality of leaf springs interposed between a sample block and a sample well tray holder, as recited in claim 43. In addition, Moser fails to disclose a sample well tray holder for holding the sample well tray therein, the sample well tray being movable relative to the sample well tray holder, as recited in claim 43.

For at least these reasons, independent claims 1, 19, and 43 are allowable over Moser.

#### **Rejections under 35 U.S.C. § 103**

The Examiner rejected dependent claims 16-18 as being unpatentable over Root or Schneebli in view of Schembri. By this Amendment, claims 16-17 were cancelled. The subject matter of claim 17 ("leaf springs") was incorporated into new independent claim 43. Schembri fails to make up for the deficiencies of Root and Schneebli discussed above. The subject matter of claim 16 was incorporated into new claim 47 that depends from independent claim 43. Claim 47 is allowable for at least the reasons discussed above for independent claim 43.

Claim 18 is allowable for at least the reasons discussed above for independent claim 1 from which it depends.

#### **Conclusion**

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1-2, 4, 6-8, 10, 18-23, and 40-49 in condition

for allowance. Applicants submit that the proposed amendments do not raise new issues or necessitate the undertaking of an additional search of the art by the Examiner. Therefore, this Amendment should allow for immediate action by the Examiner. Applicants assert that claims 1-2, 4, 6-8, 10, 18-23, and 40-49 are in condition for allowance.

In view of the foregoing remarks, Applicants submit that the claims, as amended, are neither anticipated nor rendered obvious in view of the prior art cited in this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration of the application, and the timely allowance of the pending claims. In the event that the Examiner decides that the Amendment raises new issues or necessitates an additional search, Applicants request the prompt issuance of an Advisory Action so that appropriate and timely action may be taken by the Applicants to further the prosecution of this application.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account no. 06-0916.

Respectfully submitted,

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Dated: February 20, 2003

By: 

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**APPENDIX TO AMENDMENT AND REPLY FILED FEBRUARY 20, 2003**

Version with Markings to Show Changes Made

**IN THE CLAIMS:**

Please amend claims 1-2, 4, 6, 8, 10, 19-23, and 40 as follows:

1. (Three Times Amended) [A heating] An apparatus for thermally cycling biological samples, comprising:

a sample block having a plurality of openings for receiving sample wells of a sample well tray therein, the sample wells [being] having closed sample well bottoms configured to contain a sample, the plurality of openings for receiving sample wells being configured to contact an outer surface of a corresponding sample well, the sample block further comprising a plurality of receiving portions in a top surface thereof; and

[at least one urging mechanism] a plurality of spring devices interposed between the sample block and the sample well tray, the plurality of spring devices being positioned at least partially in the plurality of receiving portions, the plurality of spring devices [said urging mechanism configured to impart] imparting an urging force on the sample well tray,

said plurality of spring devices creating the [said] urging force [configured] to urge the sample wells away from the openings in the sample block upon removal of a pressing force imparted on the top of the sample well tray for pressing the sample wells into the openings of the sample block.

2. (Twice Amended) The apparatus of claim 1, wherein [said urging mechanism is] the plurality of spring devices are engageable with the sample well tray.
4. (Twice Amended) The apparatus of claim [3] 1, wherein at least one of said spring devices is positioned about an outer periphery of the sample block in a region outside of the openings in the sample block.
6. (Twice Amended) The apparatus of claim [5] 4, wherein said at least one spring device comprises a coil spring.
8. (Twice Amended) The apparatus of claim [3] 1, wherein said plurality of spring devices are positioned substantially symmetric around the periphery of the sample block.
10. (Twice Amended) The apparatus of claim 1, wherein the [urging mechanism comprises a] plurality of spring devices are spaced around an outer periphery of a top surface of the sample block, [said spring devices being accommodated in cylindrical openings in the sample block,] said spring devices engaging a bottom surface of the sample well tray in order to provide the urging force to disengage the sample well tray from the sample block upon opening of a cover for the apparatus, said cover configured to provide the pressing force on top of the sample well tray.
19. (Amended) [A heating] An apparatus for thermally cycling biological samples, comprising:
- a cover;

a sample block having a plurality of openings in a top portion thereof for receiving a sample well tray having a plurality of sample wells, the sample wells having closed sample well bottoms configured to contain a sample, the plurality of openings for receiving sample wells being configured to contact an outer surface of a corresponding sample well, the sample block further comprising a plurality of receiving portions in a top surface thereof; and

[an urging mechanism] a plurality of spring devices positionable between the sample block and the sample well tray at least partially in the plurality of receiving portions to urge the sample well tray away from the sample block when the cover is moved from a closed position toward an open position,

wherein said cover imparts a downward force on the top of the sample well tray to press the sample wells into the openings of the sample block when the cover is moved toward a closed position, said urging mechanism imparting an upward force on the sample well tray, and wherein said downward force imparted by the cover [is sufficient to retain] retains the sample well tray against the sample block when the cover is in said closed position.

20. (Amended) The [heating] apparatus of claim 19, wherein [a] the sample well tray is positionable between the cover and the sample block when the cover is in a closed position.

21. (Amended) The [heating] apparatus of claim 20, wherein the [urging mechanism comprises at least one spring device] plurality of spring devices are engageable with the sample well tray and the sample block.

22. (Amended) The [heating] apparatus of claim 21, wherein [the at least one spring device engages the sample block, the at least one spring device] the plurality of spring devices are [being] positioned on a surface of the sample block radially outside of the openings in the sample block.

23. (Amended) The heating apparatus of claim 22, wherein the [sample block further comprises] plurality of receiving portions comprise a plurality of cylindrical spring openings for receiving [a] the plurality of the spring devices [of the urging mechanism].

40. (Amended) The apparatus of claim 1, wherein said pressing force [is sufficient to counteract] counteracts said urging force to retain the sample well tray against the sample block when said pressing force is imparted.